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Abstract

PURPOSE: To effectively realize an InP Schottky junction by forming a GaAs epitaxial atomic layer of one conductivity type on a InP crystal of one conductivity type and then metallic electrodes in contact with the epitaxial layer.

CONSTITUTION: A buffer layer 2 is first formed on an Sn-doped n^{++} -InP substrate 1 by an epitaxial growth method. Then an Sn-doped GaAs atomic layer 5 is formed on the buffer layer 2 as an atomic layer 5 by an atomic-layer epitaxial growth method. Finally, an A electrode 4 is formed on the GaAs atomic layer 3 by vapor deposition and a substrate-side electrode 5 is formed by vapor-depositing and alloying Au and Sn on the substrate 1 side. The electrodes 4 and 5 respectively form a Schottky and ohmic electrodes. The atomic layer 3 of the Schottky junction type diode thus formed is thin in thickness and the extension of the depletion layer can be decided easily. Thus an InP Schottky junction can be realized effectively.